

Identifying Toxic Chemicals

Grades

3-5

Subjects

Science and Health

Duration

1 hour

Materials

Mr. Yuck stickers

Examples of warning signs and symbols and product labels

Pictures of toxic chemicals or things that produce toxic chemicals such as frogs, spiders, plants, cleaning chemicals, cigarettes, alcohol, automobile exhaust, incinerators, factories

Household Hazardous Chemical Checklist

Non-Toxic Alternatives Handout

A ziploc bag containing three fruit-flavored Tums

A ziploc bag containing three Sweet tarts

A ziploc bag containing three Red hots

A ziploc bag containing three Sudafed

A clear bottle containing Pinesol

A clear bottle containing apple juice

Objectives

The students will be able to:

Understand that our world is composed of chemicals

Understand the definition of toxic chemical

Understand that it is not easy to know if a chemical is toxic

Learn how to identify toxic chemicals by reading labels

Identify toxic chemicals that are used in the home

Set

Begin the class by asking the students if they know what a chemical is and ask them to “brainstorm” a list of chemicals or things that are made up of chemicals. This list might include chemicals like drugs they take when they are sick, bug spray that people put on themselves and on their gardens to get rid of bugs (eg. pesticides), and cleaners that they use at home. Then move on to compounds that students might not think of as chemicals, such as the food we eat and water we drink. Ask students what our bodies are made of and point out that there is nothing in this world that is not composed of chemicals. Explain that the human body is made up of many organs and cells all of which are made up of small “pieces” that cannot be seen but are called chemicals. The point of this exercise is to demonstrate that everything in the world, including our bodies is made up of chemicals.

Instructional Input

Ask the students to think of some good uses of chemicals. Ask the class if they think some chemicals can harm them and if so, what kinds of chemicals can harm them and how.

Explain to the class that when a chemical causes harm, it is called a toxic chemical. Have a student write the word “toxic” on the black board. Ask the students if they have ever heard the word toxic used before. Ask the students if they think all chemicals are toxic, including chemicals found in food that are necessary for human life.

Explain to the class that all chemicals can be toxic or cause harm to people, animals, and plants if too much is taken in. Use an example of a child that eats too much candy—he feels sick afterwards. Explain to the class that many chemicals when used in the right amounts can be beneficial. Some examples are prescription medicine, when taken in the right amounts they can make you feel better, but if you take too much, you can get even sicker.

Explain to students that some chemicals are more toxic than others. For example, if a person eats an entire bag of candy, s/he will feel sick. If a person eats a handful of mothballs, s/he could die.

Show students photos or examples of the following and ask them which ones they think might be toxic. Some examples include: *Household chemicals, cleaning supplies; Pesticides, fertilizers, bug sprays; Pollution (air, water, soil, hazardous waste); Alcohol, cigarettes; Salt; Metals (iron, lead, etc); Poisonous plants like poison ivy or oak; A snake or spider.* Tell the students that all of the things you showed them are examples of or contain toxic chemicals.

Show students poison ivy/oak, snake and spider photos. Explain that in nature some plants make toxic chemicals or poisons as a natural defense against their predators (bugs or other animals). These poisons make them taste bad to animals or bugs that want to eat them and in some cases can make the animals or bugs sick and may even kill them. Some animals and insects use poisons as a defense against other animals that threaten them. Some of the toxic chemicals found in nature can make people sick too.

How can you tell its bad for you?

Ask the students if they think toxic chemicals are easy or difficult to recognize.

Show students the following 1) a bottle containing apple juice next to one containing Pine Sol, 2) a jar of Tums next to jar of Sweet Tarts, 3) a bag containing Red Hots next to a bag containing Sudafed. Explain that one of each of the containers holds something that could make them sick if they ingested it. Ask if they can tell which jar contains something that might harm them if they ate or drank it. Ask to discuss ways that they can tell if something is toxic.

If students suggest taking the cap off of the bottle in order to smell the chemical to see if it smells toxic explain to them that many toxic chemicals have no smell or taste. In some cases they can get sick just from smelling a toxic chemical, so it is never a good idea to smell or taste something to see if it is toxic.

(There is a great webpage designed by the Middle Tennessee Poison Center and the Vanderbilt Center in Molecular Toxicology that demonstrates how many household cleaners and medicines look similar to products we eat and drink. As an additional activity have students visit <http://www.toxicology.mc.vanderbilt.edu/laweb/home.html> and go through the Look-alike website.)

Show students a picture of Mr. Yuk, the skull and cross bones symbol and flammable, corrosive and explosive symbols. Ask them if they have ever seen these symbols before and if so where. Ask the class what they think the symbols mean. Show students some of the following words and have them read them aloud: Caution, Warning, Poison, Toxic, Danger. Ask them if they recognize any of the words and what they mean. Explain what the symbols and words mean and how they can be helpful in recognizing whether or not something is a toxic or dangerous chemical. If you can find household product labels with these symbols on them, show them to the class as examples.

Closure

Have students take home and complete a *Hazardous Household Chemicals Checklist*. When the students have completed the checklist, discuss how they recognized that something in their home was possibly a toxic chemical.

Additional resources

Mr. Yuk stickers and other poison prevention materials can be ordered from:

EMS/StateComm

700 S. Stratford Dr., Bldg. #7

Meridian, ID 83642

Phone: (208) 334-4013

Fax: (208) 846-7618

Or order online at <http://www2.state.id.us/dhw/poison/materials.htm>